

Appl. No. 10/786,890
Amdt. Dated August 8, 2006
Reply to Office Action of May 8, 2006

Attorney Docket No. 81880.0114
Customer No.: 26021

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Listing of Claims:

1. (Original): A print mask used to form bumps on barrier metal layers of a wafer comprising a plurality of elongated perforations disposed in linear arrangement for applying a paste via the perforations onto an object of printing,

wherein each of said perforation includes an edge disposed along the longitudinal direction, said edge being inclined with respect to the direction perpendicular to the direction of arranging the perforations.

2. (Original): The print mask according to claim 1, wherein the edge of said perforation disposed along the longitudinal direction thereof is substantially straight.

3. (Original): The print mask according to claim 1, wherein the edge disposed along the longitudinal direction of said perforations is inclined by an angle from 5 to 45° from the direction perpendicular to the direction of arranging said perforations.

4. (Original): A print mask comprising a number of perforations disposed in a single row or a plurality of rows for applying and printing a printing paste via the perforations onto a wafer so as to form bumps on barrier metal layers provided on the wafer,

wherein the density of arrangement of said perforations is set differently from region to region within the arrangement and the opening area of said perforation is set smaller in the region of an arrangement where the density of arrangement of said perforations is higher.

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5. (Original): The print mask according to claim 4, wherein said perforations are disposed in a plurality of rows and the density of said perforations is set individually for each row.

6. (Original): The print mask according to claim 5, wherein the rows of said perforations are disposed substantially in parallel to each other.

7. (Withdrawn): A method of manufacturing electronic components using the print mask according to claim 4 comprising:

positioning said print mask on or above a wafer so that said perforations are located above barrier metal layers provided on said wafer,

placing printing paste on said print mask,

moving said printing paste along the row of said perforations of said print mask so as to apply and print said printing paste via said perforations onto said barrier metal layers, and

forming bumps on said barrier metal layers.

8. (Withdrawn): A method of manufacturing flip-chip integrated circuit, comprising:

preparing a semiconductor wafer having a plurality of barrier metal layers arranged in a planar configuration on the top surface of the wafer, circuit pattern lines provided between the adjacent barrier metal layers and passivation layers that covers said circuit pattern lines,

preparing a print mask having a plurality of elongated perforations that correspond to said barrier metal layers,

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placing said print mask on said barrier metal layers so that edges of the perforations along the longitudinal direction thereof are inclined with respect to said circuit pattern lines provided between the adjacent barrier metal layers,

supplying printing paste onto said print mask and applying and printing said printing paste via the perforations onto said barrier metal layers, and

baking said paste provided on said barrier metal layers so as to form bumps.

9. (Withdrawn): The manufacturing method according to claim 8, wherein the edge of the perforations along the longitudinal direction thereof is straight.

10. (Withdrawn): The manufacturing method according to claim 8, wherein the width of the perforation is larger than the width of said barrier metal layer.

11. (Withdrawn): The manufacturing method according to claim 8, wherein the edge of the perforation is inclined by an angle of 5 to 45° from said circuit pattern lines.